115015

Superfund Program Proposed Plan

Metal Bank Superfund Site

Philadelphia, PA **July 1995**

EPA ANNOUNCES PROPOSED PLAN

SUMMARY

PROBLEM: Facility that recycled electrical transformers.

FINDINGS: Oil and Polychlorinated Biphenyls (PCBs) from the transformers remain in the soil and groundwater. Other contaminants such as metals and volatile and semi-volatile organic chemicals were also found. PCBs released into the Delaware River may cause harm to living organisms.

Tides from the Delaware River are flushing contamination from the Site. Regional groundwater flow may also be flushing the contaminants underneath the Site.

PROPOSED REMEDY: Remove PCB sources: an Underground Storage Tank; soils that contain PCBs greater than 25 ppm. Excavate contaminated sediments from the Delaware River and use it as Site fill if it is less than 25 ppm PCB. Separate PCBs/oil from the groundwater before it reaches the river.

WANTED: Your (Public) Comments. EPA may change the proposed remedy based on public comments. Therefore the public is encouraged to review & comment on the alternatives identified.

FOR MORE INFORMATION Read On

This Proposed Plan identifies the proposed remedy for the Metal Bank Site. In addition, the Plan includes summaries of other alternatives analyzed for this Site. This document is issued by the U. S. Environmental Protection Agency (EPA), the lead agency for Site activities, in consultation with the Pennsylvania Department of Environmental Protection (PADEP), the support agency. This remedy will address the long-term threat caused by the Site. EPA will finalize its selection of a remedy for the Site only after the public comment period has ended and the information submitted during this time has been reviewed and considered.

Dates to remember:
Mark Your Calendar

July 20 - August 19, 1995
Public comment period on alternatives in Proposed Plan.

July 27, 1995
Public meeting at the Disston Recreation Center
1511 Disston Street
Philadelphia, PA
7:30 PM

INSIDE

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EPA has prepared this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the ***Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)***. This Proposed Plan summarizes information that can be found in greater detail in the ***Remedial Investigation and Feasibility Study (RI/FS)*** report and other documents contained in the ***Administrative Record*** file for this Site. EPA encourages the public to review these documents in order to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted there. The Administrative Record file, which contains information upon which the final selection of the remedy will be based, is available at either of the following locations:

NE Branch of Philadelphia Library
2228 Cottman Avenue
Philadelphia, PA 19149
(215) 685-0522
Hours: Mon-Wed 10AM-9PM
Thur-Sat 10AM-5PM

U. S. EPA - Region III
841 Chestnut Building
Philadelphia, PA 19107
(215) 597-3037
Contact: Anna Butch, Administrative Record Coordinator
Hours: Mon-Fri 8:30 AM-4:30 PM

A glossary of abbreviations that may be unfamiliar to the general public is provided at the end of this Proposed Plan.

I. SITE BACKGROUND

The Site is located at 7301 Milnor Street in an industrial area of northeastern Philadelphia (see Figure 1). The Site is bordered by an orphanage (St. Vincent's School) and a mudflat on the west, Milnor Street on the north, a paper recycling company (Hancock Paper Co.) and a metal salvage yard (Morris Iron & Steel Co.) on the east, and the Delaware River on the south. There is a City of Philadelphia stormwater outfall that empties into the mudflat. There is also a marina (Quaker City Yacht Club) located west of the mudflat.

The Site consists of two areas: (a) the southern area which was used as a scrap metal recovery area, and (b) the northern area which consists of three vacant brick and steel buildings. The southern area is approximately six acres and consists of artificial fill over what was once the bed of the Delaware River.

Figure 2 illustrates the approximate location of each area that will be discussed in this document. The Southern Portion of the Site includes an Underground Storage Tank (UST) which is buried inside the ***Non-Aqueous Phase Liquid (NAPL)*** Area. The NAPL Area is an area thought to contain residual oil and will be discussed in greater detail below. There are also areas containing elevated concentrations of Polychlorinated Biphenyls (PCBs) in the Southern Portion of the Site. These areas are depicted as Hot Spots and will also be discussed below. Along the shoreline of the Southern Portion of the Site is the River Sediment Area. This area includes the Mudflat Area, the Riprap Area, and the Delaware River Sediment Area. The northern area contains the Building Area, the Courtyard, and a parking area.

Light Non-Aqueous Phase Liquid (LNAPL) is a condition where an oil layer, being immiscible with and lighter than water, floats on top of the water table. At this Site, the LNAPL has been shown to be contaminated with PCBs. The oil layer has been observed to discharge to the river in the Mudflat Area and is believed to be the vehicle by which the PCBs enter the river and sediments. The extent of the LNAPL is depicted in Figure 2 as the NAPL Area.

Evaluation of the RI/FS provided evidence that there may also be a ***Dense Non-Aqueous Phase Liquid (DNAPL)***. DNAPLs are oil layers that are heavier than water and, therefore, sink in the aquifer until they meet an impermeable layer. DNAPLs then flow primarily by gravity. In certain subsurface soil samples, such as SB-105 and SB-106 (see Figure 3), the profiles show PCB levels that remain the same or potentially increase with depth below the water table. The presence or absence of the suspected DNAPL will be determined during the design phase of the remedy.

From 1882 to 1962, the Site was owned by a power equipment manufacturer and a now-disbanded federal agency ("the War Assets Administration"). Since 1962, the Site was owned by the predecessor to Metal Bank of America, Inc., Metal Bank of America, Inc., and various principals of the corporation. In 1980, the Philadelphia Authority of Industrial Development ("PAID"), acting on behalf of the City of Philadelphia, purchased the Site from the corporate principals and entered into an installment sales contract with Metal Bank. In 1985, the Site owner ("Metal Bank") sold its assets (with the exception of the real estate at this Site and on State Road) and no longer operated as a company, and was renamed U.C.O.-M.B.A., Inc.

The buildings located in the Building Area were leased to various tenants from the 1960's to the 1980's, including an automotive dealership, a rug shampoo company, a rock salt storage company, and an automotive repair company. Manufacturing activities took place on the Site between 1882 and 1955. In 1962, the Site was used for the storage and reclamation of various scrap metals.

From late 1968 until early 1973, transformer salvage operations were conducted at the Site. Some of the transformers purchased by Metal Bank contained oil. This oil was drained on a concrete pad which was connected to an Underground Storage Tank. Spills of the oil and possibly a rupture of the tank caused soil and groundwater contamination. Between 1968 and 1972 copper wire may have also been burned to remove insulation, however Metal Bank states that oil was not burned. The following chronology highlights the enforcement activities by various governmental agencies and other cleanup activities that have taken place at this Site leading up to the present time.

DATE	EVENT
1950 - 1967	Approximately 15 feet of fill, from unknown origin, was gradually added onto a portion of the Site that was part of the Delaware River. This area is referred to here as the Southern Portion of the Site.
1972	The United States Coast Guard (USCG) investigated reports of oil seeps into the Delaware River and concluded that Metal Bank was the source. Analyses using then-available state-of-the-art technology did not detect PCBs in the oil samples.
	Metal Bank performed various remedial actions following the recommendations of the USCG which included cleanup of spilled oil and improved housekeeping. Metal Bank also reported that it had ceased all transformer salvaging activities.
1977	EPA retested the 1973 USCG samples using new procedures. The new analyses disclosed the presence of PCBs at concentrations over 800 ppm.
	The USCG, EPA, PADEP, the Army Corps of Engineers, the City of Philadelphia, the Fish and Wildlife Service, the National Oceanic and Atmospheric Administration (NOAA), the Delaware River Basin Commission, and others inspected the Site. As a result of several inspections, EPA prepared a Scope of Work with recommendations concerning remediation of the PCB problem. EPA requested that Metal Bank fulfill the Scope of Work. Metal Bank rejected EPA's Scope of Work and employed its own technical consultants who concluded that the most appropriate action was to leave the PCBs in place, removing only the freely recoverable oil.

1980	EPA filed suit in the District Court for the Eastern District of Pennsylvania for injunctive relief and costs against Metal Bank under the Resource Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA), the law that regulates usage of PCBs. During the litigation, Metal Bank's consultant designed a groundwater recovery and treatment system. The system consisted of two recovery wells and several separation units which collected the oily solids.
1981	Metal Bank reported to PADEP in 1986 that the Underground Storage Tank was drained, cleaned, and filled with concrete in 1981.
1983	EPA settled the suit with Metal Bank under a Stipulation that required Metal Bank to install and operate the groundwater recovery and treatment system until all recoverable oil was removed from the Site. However, the system did not operate between December and February because of freezing weather. The Site was placed on the National Priorities List (NPL) based on a Hazard Ranking System (HRS) score of 33.23. Most of this score related to the Torresdale water supply intake, which is approximately 2.1 miles upstream, and the possibility that PCBs from the Site would reach the intake due to tidal influences.
December 1987	EPA sent letters to individuals and companies notifying them that they are Potentially Responsible Parties (PRPs) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). EPA's allegations were based on invoices which indicate that the PRPs sent, either directly or through brokers, transformers and other electrical equipment to Metal Bank of America.
January 13, 1989	Metal Bank notified EPA pursuant to the Stipulation that it intended to shut down the oil recovery system, stating that all recoverable oil had been removed.
April 1, 1989	Due to the concern that PCB oil may have been burned at the Site, EPA conducted dioxin soil sampling at St. Vincent's School. The soil samples did not demonstrate a health risk problem due to dioxin.
June 12, 1989	The Court issued an Order denying a motion by the United States to prevent permanent shutdown of the recovery system. The recovery system was subsequently dismantled and removed. Samples from monitoring wells taken in March and August of 1989 continued to recover a floating layer of oil.
June 1991	EPA signed an Administrative Order by Consent with 10 PRPs comprising the Cottman Avenue PRP Group to conduct a Remedial Investigation and Feasibility Study (RI/FS). Metal Bank, however, declined to join the PRP Group. Most of the PRP Group are utility companies.
October 1994	The RI/FS report was submitted to EPA.
January 1995	PRPs performed additional sampling of the Delaware River Sediment Area. The results of this sampling were submitted to EPA on April 17, 1995 in a report titled "Remedial Investigation Addendum" (RI Addendum).

Historical aerial photographs have shown that most of the Southern Portion of the Site was part of the Delaware River prior to 1950. This area was gradually filled in from 1950 to 1967. Approximately 15 feet of fill underlies the Site. The fill materials contain pieces of brick, lumber, cloth, metal, and concrete along with natural earth materials (sand, silt, gravel, etc.). The United States Department of Agriculture, Soil Conservation Service (SCS) has not classified the soils at the Site and other similar areas in Philadelphia County since identification of the reworked soils here is not practical. The material beneath the fill is reportedly a stiff gray clay of low permeability which appears to be continuous with the Delaware River bottom. Since no sampling has been performed beneath this clay layer, it is not known if this material represents a divider between the fill layer and the underlying aquifer.

According to published data, the next layer under the fill, is approximately 15 feet of the Farrington Sand formation. Below the Farrington Sand formation, and approximately 50 feet from the surface of the Site, is the bedrock. The bedrock is classified as the Proterozoic rock of the Wissahickon Formation. Groundwater movements in the rock formation are through cracks and openings known as fractures and joints. Based on well records, groundwater within this formation flows towards the southeast. Several rounds of water level measurements on-site have also demonstrated that groundwater discharges through the fill into the Delaware River in a southeasterly direction.

EPA has observed that during high tides, there is an increase in groundwater level while during low tide, there is a decrease. However, the exact extent of the correlation cannot be determined from the tidal monitoring performed as part of the RI/FS. Therefore, tides from the Delaware River do have a flushing effect on the contaminants in the subsurface soil and also act as a transport mechanism. Regional groundwater flow direction and flow direction during high tides are illustrated on Figure 2A.

Since the 1960's, activities at the Site have included reclamation and recycling of large electrical transformers, many of which contained PCB-bearing oils. These oils were drained from the transformers and were stored in an Underground Storage Tank (UST) near the southwest corner of the Site. In 1986, the Site owner submitted to PADEP a Registration of Storage Tanks form which stated that the UST was cleaned and filled with concrete in 1981. During the RI/FS in 1993, several anomalies were detected with a ground penetrating radar used by the PRPs. The PRP's consultant attempted to excavate a test pit to confirm the Site owner's cleanup but a concrete slab was encountered 1 foot below ground surface which prohibited further investigation. It is unknown if the tank was actually drained of all PCB fluids or if its surroundings are free from all PCB residues.

Testing of on-site soils and monitoring wells identified sporadic concentrations of PCBs that may have resulted from poor housekeeping and from seepage of oil from the Underground Storage Tank. Inside the Building Area, analyses of chip samples of stained concrete show concentrations between 1.69 to 372 parts per million (ppm) of PCBs. Analyses of soil samples show PCB concentrations up to 42 ppm at various depths (in the Southern Portion of the Site) and up to 140 ppm at the surface (in the Courtyard area). The locations of the highest observed PCB contamination have been depicted on Figure 3. Soil samples that appeared to have been stained with oil contained up to 25,000 ppm of ***Total Petroleum Hydrocarbon*** (TPH). Groundwater samples from on-site wells show PCB concentrations as high as 25.6 ppb in the water phase to 1,000 ppm in oil layer phase (LNAPL).

Testing of groundwater beneath the Site has shown elevated levels of Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), and metals (see Figure 4 for metals). There are no patterns indicating the contamination is due to one source. This may be due to the random fill used at the Site. The Site is located in an industrial area of Philadelphia where the upgradient groundwater may also contain elevated levels of contaminants. During the RI/FS, no groundwater samples were analyzed from off-site upgradient and background locations.

While no records exist, the fill material used may have been debris from demolition, construction of Interstate 95, and a variety of other urban sources. This type of debris is commonly called "urban brown", which may contain petroleum products such as asphalt, hydraulic and lubricating oil; wood treated with pentachlorophenol (PCP), copper chromium arsenate (CCA) or creosote such as in telephone poles, dock pilings and railroad ties; tires; and other materials containing metals and organic compounds.

SVOCs and PCBs have also been identified in the River Sediment Areas along the shore. Samples of sediments taken at various depths along the Delaware River show concentrations up to 19.6 ppm of PCBs and 17,000 ppm of TPH. However, their distribution and concentration appear to decrease with distance from the Site. Examples of the various ranges of PCB, and metal concentrations observed during the RI/FS are illustrated in Figures 3 and 4.

II. SCOPE AND ROLE OF ACTION

The proposed remedy discussed in this Proposed Plan would be the final remedy planned for the Site. The remediation objective is to address the principle threat and reduce ***risk*** to human health and the environment caused by the Site, consistent with the ***National Contingency Plan (NCP)***. In order to achieve this objective, the selected remedy must: 1) remove and dispose of contaminants from the Site, in the Delaware River or other environments, which cause an unacceptable risk to human health, terrestrial or aquatic life; 2) provide containment and long-term monitoring of Site contaminants, which would cause an unacceptable risk to human health, terrestrial or aquatic life, if they should continue to be released into the Delaware River or other environments; and 3) mitigate unavoidable impacts to wetlands (or "waters of the U.S.") caused by implementing the Site remedy.

EPA's evaluation has identified PCBs as the major contaminants of concern that are causing unacceptable risks to human health, terrestrial and aquatic life. Therefore the remediation objective requires addressing PCBs as the principal threat and risk to human health and the environment. Other contaminants of concern at the Site include metals such as arsenic, beryllium, chromium, copper, lead, and mercury; SVOC such as Methylethyl Ketone and phthalates; DDT-type pesticides; polynuclear aromatic hydrocarbons (PAHs); dioxins and furans.

The facts and health effects associated with PCBs are provided in the PCB Fact Sheet, a shaded box on page 7.

III. SUMMARY OF SITE RISKS

In August 1990, EPA issued Guidance (OSWER Directive 9835.15) requiring that all risk assessments for PRP-funded investigations such as an RI/FS are to be performed internally by agency personnel. As a result, the Administrative Order by Consent provides that the agency specialists will perform the risk assessments. EPA evaluated the risk to human health and terrestrial life, and requested assistance from NOAA to evaluate the risk to aquatic life. Each of these assessments are provided in their entirety in Appendix D of the RI/FS.

The summary below does not present all of the considerations or data discussed in the assessment, but rather the highlights that formed the conclusion. Therefore, the reader is encouraged to review the risk assessments in their entirety to fully understand all the factors considered by EPA in their evaluation of potential risks.

PCB FACT SHEET

PCBs (Polychlorinated Biphenyls) belong to a broad of family of organic chemicals known as chlorinated hydrocarbons. PCBs are produced by the combination of one or more chlorine atoms and a biphenyl molecule.

Prior to 1979, PCBs were widely used in electrical equipment such as transformers, capacitors, switches, and voltage regulators for their "cooling" properties because they do not readily burn or conduct electricity, and only boil at high temperature. Also, PCBs do not readily react with other chemicals. They were also used in mining equipment, heat transfer and hydraulic systems, carbonless copy paper, pigments, and microscopy mounting media. Virtually all PCBs in existence today have been synthetically manufactured (man-made). EPA regulates PCBs through rules issued pursuant to the federal **Toxic Substances Control Act of 1976**. These regulations control the use, marking, storage, records, and disposal of PCBs.

When released into the environment, PCBs do not easily break apart and form new chemical arrangements (i.e., they are not readily **biodegradable**). Instead, they remain in the environment and are taken up and stored in the fatty tissues of all organisms. The concentration of PCBs in fatty tissue increases with time even though the exposure levels to PCBs are very low. This process is called **bioaccumulation**. Another problem, known as **biomagnification**, is that PCBs build up in the food chain. As living organisms containing PCBs are eaten by other organisms, the amount of PCBs consumed by each higher organism increases. The concentration consumed by humans, at the end of the food chain, can thus be significant.

Laboratory data show that PCBs cause cancer in animals. Although there are no actual data showing that PCBs cause cancer in humans, EPA's policy is to consider animal carcinogens to be possible human carcinogens. Animal studies show adverse reproductive and developmental effects from repeated exposure to PCBs. In addition, it has been shown that PCBs are toxic to fish at very low levels of exposure. The survival rate and the reproductive success of fish can be adversely affected by the presence of PCBs. EPA believes there may be similar cause for concern when humans are exposed to large doses of PCBs. Exposure to PCBs can cause chloracne (a painful, disfiguring skin ailment), liver damage, nausea, dizziness, eye irritation, and bronchitis.

The dangers of toxic doses of PCBs were dramatically and tragically brought to the world's attention in 1968, when some 1,300 people in Yusho, Japan, used rice oil that had been accidently contaminated with PCBs leaking from a heat exchanger. The victims developed a variety of ailments characterized as "Yusho Disease". These symptoms include skin lesions, eye discharges, abdominal pain, menstrual irregularity, fatigue, cough, disorders of the nervous system, hyperpigmentation of the skin, nails and mucous membranes. And although precise figures are not yet available, there is evidence that there was an increased rate of cancer among the Yusho victims who have died since 1968. As a result of the Yusho tragedy, the Japanese government virtually banned the production, import or export of PCBs in 1972.

PCB contamination has also taken its toll in the United States. Measurable amounts of PCBs can be found in soils, water, fish, milk, and human tissue. Some fish in the Hudson River, the Great Lakes and other water bodies are too contaminated with PCBs for human consumption. There is a fish advisory in the Delaware River due to PCB contamination in Delaware River fish.

Other by-products that are much more toxic than the PCBs themselves occur when PCB oil or its dielectric fluid is partly burned. The PCB fluid produces polychlorinated dibenzo**dioxin** and polychlorinated dibenzo**furans**. Tests on rats show that furans can cause anemia and other blood problems. Dioxin is associated with a number of health risks, and has been shown to cause cancer of the liver, mouth, adrenal gland, and lungs in laboratory animals.

III.A. Human Health Risk Assessment

EPA identifies potential human health risk by estimating a carcinogenic risk level and a non-carcinogenic hazard index. For example, a 1×10^{-6} level means that there will be, at the most, one chance in 1,000,000 that an individual will develop cancer above the expected rate for the normal population (which is 1 in 4) as a result of Site-related exposure. EPA's position is that risk must be at a level less than $\underline{1\times10^{-4}}$, one chance in 10,000, to be acceptable; however, risk levels between 1×10^{-4} and 1×10^{-6} may also prompt EPA to take remedial action. Remedial Action is generally warranted when the carcinogenic risk levels exceed 1×10^{-4}.

The hazard index identifies the potential for the most sensitive individuals to be adversely affected by non-carcinogenic chemicals. If the hazard index exceeds one (1), there may be concern. As a rule, the greater the value is above 1, the greater the level of concern. Changes in the hazard index, however, must be one or more orders of magnitude (e.g., 10 times greater), to be significant.

The principal results of the Human Health Risk Assessment are summarized as follows:

1. *OFF-SITE RESIDENTS*: Cancer risk associated with inhalation of Site dust was estimated to be $\underline{2x10^{-6}}$. The Hazard Quotient could not be calculated since none of the contaminants had inhalation reference doses. Therefore, the Site does not pose an unacceptable risk to *Off-Site Residents*.

2. *RECREATIONAL FISHERMEN (BOATERS)*: Lifetime cancer risk associated with eating fish fillets that contain PCBs ($4x10^{-4}$) and chance ingestion of sediments containing PCBs ($1x10^{-5}$) was estimated to total $\underline{4x10^{-4}}$. Although PCB levels in fish tissues may be due to sources other than the Site, contamination in the nearby sediments, especially in the Riprap Area, appears to be Site-related. PCB concentrations in the Riprap Area (see Figure 3) were as high as 19.6 ppm, as previously mentioned. Therefore, the Site poses an unacceptable risk, through the Riprap and sediments, to *Recreational Fishermen (Boaters)* who eat 10 meals a year of fish caught near the Site.

3. *FUTURE INDUSTRIAL WORKERS*: Cancer risk associated with future employees who work at the Site on a regular basis was estimated to be $\underline{7x10^{-5}}$. The majority of the risk was attributed to chance ingestion of soil contaminated with PCBs in the Courtyard. Chance ingestion may occur when an individual eats food with hands that have been in contact with contaminated soils.

   The presence of arsenic, beryllium, and chromium in surface soils also contributed to the risk outside of the Courtyard but EPA acknowledges that these are trace amounts and may represent background levels for the area. Nevertheless the Courtyard surface soils pose an unacceptable risk to *Future Industrial Workers*.

4. *FUTURE CONSTRUCTION WORKERS*: Cancer risk associated with construction workers such as cleanup contractors who spend one year working at the Site was estimated to be $\underline{6x10^{-3}}$ assuming no protective precautions were in place. The high cancer risk originated from two sources: (1) workers coming into contact with PCBs found in the oil layer of groundwater sampled in monitoring well MW#6, which is located in the NAPL Area; (2) ingesting polynuclear aromatic hydrocarbons (PAHs), and dioxins and furans found in the subsurface soils. Since the reasonable maximum concentration of dioxins and furans was only 4 ppb and the risk was only $\underline{5x10^{-6}}$, this contaminant's risk was considered to be relatively minor compared to those associated with PCBs. Therefore the PCB oils floating in the groundwater poses an unacceptable risk to *Future Construction Workers*.

5. *SCENARIOS NOT EVALUATED*: EPA did not consider *FUTURE RESIDENT ON-SITE* because residential use of the Site would be unlikely on the basis of population trends in the area, current land use, and future land use plans of the City of Philadelphia. EPA also did not consider *FUTURE GROUNDWATER INGESTION ON-SITE* since it is unlikely any future commercial tenants of the property would drill wells when city water is available. Finally, EPA did not consider *HYPOTHETICAL ADOLESCENT TRESPASSERS* because the *FUTURE INDUSTRIAL WORKER* scenario was similar and more conservative.

III.B. Terrestrial Risk Assessment

The Terrestrial Risk Assessment evaluated the impacts from contaminants found in the Site media (i.e., Groundwater, Soil, Surface Water, Mudflat and Riprap) to land animals such as muskrats, ducks, and birds as well as the organisms (i.e., worms and snails) which they feed upon. The possibility that a certain contaminant in a Site medium would have an impact was expressed as the Environmental Effects Quotient (EEQ). EEQs were calculated for each Site contaminant in each Site medium by dividing the maximum concentration of the contaminant found or its statistical derived concentration known as the 95% Upper Confidence Limit Value by the Environmental Effects Criteria (EEC), which provides a measure of the impact of a given amount of the contaminant on the species in question. Since no testing has been done on animals at the Site, EEC values were obtained from published research papers. Any contaminant in a medium that had an EEQ greater than one (1) was considered to present an unacceptable risk and labeled as a Contaminant of Concern (COC). Any area (medium) that demonstrated EEQ values that collectively exceeded 10 was considered to be of high terrestrial risk. Table 1 presents the EEQ value of the contaminants that cause a risk in the different areas on the Site.

The principal results of the Terrestrial Risk Analysis may be summarized as follows:

1. *GROUNDWATER*: Total EEQ values were approximately 1000 and ranked by contaminants in the metals and pesticides group. Since the only possible exposure of terrestrial organisms to groundwater is when it enters into the *SURFACE WATER* through seeps, evaluation of that medium was reserved for the Aquatic Risk Assessment. The Aquatic Risk Assessment calculated that when the groundwater reaches the surface water, it is diluted in the Delaware River by several magnitudes such that all contaminants, except PCBs, will not pose a threat to aquatic organisms in the Delaware River. Therefore metals and pesticides in the groundwater do not pose an unacceptable risk to the terrestrial environment. Furthermore with the installation of Subsurface Trenches and Oil-water Separators, to be described below in Section IV.3., all uncontrolled seeps into the river would be eliminated.

2. *SOIL*: The total EEQ value for soils inside the Courtyard was not calculated because no contaminant's EEQ exceeded one. The only contaminant that exceeded one outside the Courtyard was Methylethyl Ketone (an SVOC). The only possible exposure route would be through deep rooted vegetation in the subsurface soil. Risk associated with this contaminant would be very low.

3. *SURFACE WATER*: EEQs were not calculated for this medium since this evaluation is related more to the aquatic environment and reserved for the Aquatic Risk Assessment. See Section III.C. below.

4. *MUDFLATS*: EEQs in the mudflat beyond the Site totalled 150 and were due to PCBs and DDT-type pesticides. The impact of contamination was projected to be a loss of small organisms living in the river bottom rather than the animals higher in the food chain.

   EEQs in the Mudflat Area were calculated to total 300 due to PAHs from the SVOC group and DDT-type pesticides.

5. *RIPRAP*: The total EEQ values approached 20,000 and were due to PCB and several PAHs.

In conclusion, the Terrestrial Risk Assessment found that the Mudflat and Riprap Areas posed a serious risk since they contain several contaminants (such as PCBs, PAHs, and pesticides) which may affect an assortment of vegetation as well as the land creatures that feed and reproduce there.

III.C. Aquatic Risk Assessment

The Aquatic Risk Assessment was conducted to evaluate risks to the environment associated with the Delaware River. The assessment was organized into sections considering the following subjects:

1. *Fish and Other Aquatic Organisms:* Of primary concern was the Shortnose Sturgeon, a freshwater fish designated as an endangered species by Federal and Commonwealth of Pennsylvania regulations (see 50 CFR §17.11-12 and 58 PA Code Chapter 75, Section 75.1-2305b.). The Shortnose Sturgeon spends its entire life cycle in the Delaware River. The channel catfish was used as a surrogate for the assessment of the potential exposure of endangered sturgeon to PCBs, since no recent data were available on tissue PCB concentrations in sturgeon.

2. *Contaminants of Concern*: PCBs were identified as the primary contaminant of concern because of (a) elevated concentrations in groundwater, NAPL, and sediments; and (b) their high potential for bioaccumulation in aquatic organisms. However, the impacts of other contaminants, including PAHs and phthalates were evaluated for the Aquatic Risk Assessment.

3. *Exposure Pathways*: This section evaluated the potential routes of exposure of aquatic organisms to contaminated media and estimated exposure-point contaminant concentrations for each pathway. For the assessment of exposure to PCBs and PAHs in mudflat and river sediment adjacent to the Site, the area was divided into three zones. These divisions showed a clear pattern of decreasing concentration with distance from the Site boundary. The zones grouped for evaluation were (a) the Riprap Area; (b) the Mudflat and Delaware River within 30 meters of the Site boundary; and (c) the Mudflat and Delaware River greater than 30 meters away from the Site boundary.

4. *Toxicity*: The toxicity section determined concentrations of the contaminants of concern in the different media that can be used to assess the potential for risk to aquatic organisms due to exposure to such contaminants in the environment. Since no Site-specific testing or biological effects assessments were conducted, this assessment was based entirely on published information.

5. *Risk Characterization*: The risk characterization section used the hazard quotient method to integrate the results of the exposure assessment and the toxicity assessment and to develop an estimate of the level of risk from the estimated exposure-point contaminant concentrations for each medium. A hazard quotient represents the ratio of the estimated exposure-point contaminant concentration for a contaminant of concern to its toxicity reference concentration. Potential risk is presumed to exist if a hazard quotient is greater than one (1). However, in order to fully characterize the risk, it is necessary to evaluate each organism's frequency and duration of exposure.

The results of the hazard quotient assessments and the risk characterization for the contaminants of concern in each exposure pathway are outlined in Table 1 and are as follows:

1. *SURFACE WATER & GROUNDWATER* - Based on a screening evaluation which compared the maximum measured concentration (adjusted for dilution by the Delaware River) of potential contaminants of concern in groundwater to chronic toxicity values, only PCBs were further evaluated as contaminants of concern in the surface water. The hazard quotient based on chronic exposures for the Shortnose Sturgeon was greater than one, indicating possible risk. However, it was considered highly unlikely that individual Shortnose Sturgeon would remain in

the exposure area long enough to receive chronic exposure. PCB concentrations in surface water in the Delaware River (estimated from dilution of maximum groundwater concentrations) were not expected to result in chronic toxicity to most fish species. However, the discharge of PCBs in the groundwater into the Delaware River will contribute to PCB accumulation in nearshore food webs. This means that PCBs contribute to an unacceptable risk if they are not prevented from migrating into the groundwater and eventually discharging into the surface water.

2. *NON-AQUEOUS PHASE LIQUID (NAPL)* - Any exposure to NAPL, if it occurs, is likely to be localized in the immediate vicinity of the Riprap Area. Because measured concentrations of PCBs, PAHs and phthalates in NAPL exceeded toxicity reference concentrations by as much as five orders of magnitude, direct toxic effects to exposed organisms are highly probable. Any discharge of PCB contaminated NAPL would also contribute to PCB accumulation in nearshore organisms and food webs. Therefore, an unacceptable aquatic risk exists due to PCBs, PAHs and phthalates in the NAPL Area.

3. *MUDFLAT AND RIPRAP AREAS* - The primary route of exposure for organisms in the Delaware River and the mudflat are through ingestion and contact with (1) sediments from the shorelines and (2) water ponded around these sediments. The highest levels of PCB and PAH contamination in sediments are restricted to a relatively small area immediately adjacent to the Site. Mean sediment concentrations of PCBs and PAHs greatly exceeded probable effects levels in the Riprap Area, indicating that adverse effects to organisms exposed to these contaminated sediments are highly likely. Concentrations of PAHs and phthalates decreased in a steep gradient away from the Site, resulting in hazard quotient values that were one or less in the mudflat and Delaware River farther than 30 meters from the Site Boundary. Hazard quotients for PCBs exceeded 1 for all three zones, ranging from over 400 in the Riprap to less than 5 in the outer zone. Therefore, an unacceptable aquatic risk exists in the sediments associated with the Riprap due to PCBs and PAHs, and the degree of risk declines with distance from the Riprap Area into the Mudflat Area.

4. *DELAWARE RIVER SEDIMENT AREA* - Due to the limited sampling of Delaware River sediment, the extent of PCB contamination was not adequately defined and could extend both downstream and upstream of the Site, although concentrations appear to decline rapidly with distance from the Site Boundary. Limited data are available for contaminants other than PCBs and PAHs. Problems with data quality (high detection limits for PCBs and other contaminants) further increase the uncertainty in the exposure-point concentrations and the size of the exposure area. Therefore not enough information is available to determine if PCB concentrations and other contaminants of concern in sediments in the Delaware River adjacent to the Site represent an unacceptable degree of risk to aquatic organisms.

   In January 1995, additional samples were taken in the Delaware River Sediment Area. The result showed low concentrations of PCBs nearshore while several points (DR8, S7, S9) indicated a streak of PCB contamination that was above cleanup levels as far as 90 feet from the Site (see Figure 3). No samples were available beyond these points. To that degree, the additional sampling did not conclusively identify the extent of PCB contamination.

5. *THE SHORTNOSE STURGEON* - Considerable uncertainty exists in estimating the extent of exposure for the endangered sturgeon. In addition, little is known about its relative sensitivity to adverse effects from accumulation of PCBs. Although it occupies a lower level in the food chain than channel catfish, the Shortnose Sturgeon may be particularly prone to accumulating and transferring high concentrations of PCBs to their developing offspring (considered the most sensitive toxic endpoint for PCBs for fish) due to their bottom feeding habit, longevity, late age of sexual maturity, and high lipid content of their eggs. Therefore, the potential risk to

Shortnose Sturgeon resulting from accumulation of PCBs from all exposure pathways near the Site may be greater than for other fish species. In most fish, other contaminants such as PAHs are rapidly metabolized and excreted.

IV. SUMMARY OF ALTERNATIVES

Based on the results of the risk assessment, five (5) remedial alternatives were developed and evaluated to address the risks posed by the Site to human health and the environment. The first alternative is a "no action" alternative. This alternative provides a baseline to which the other alternatives can be compared. The other four (4) alternatives provide for various degrees of cleanup and protection. Each alternative specifies remedial actions to be taken with respect to the following areas at the Site:

1. Building Area (including the Site Boundary)
2. Courtyard
3. River Sediment Areas (including the Mudflat, Riprap and Delaware River Sediment Areas)
4. Southern Portion of the Site (including the NAPL Area, the Hot Spots and the Underground Storage Tank)
5. Groundwater

A summary of all five (5) remedial alternatives developed for the RI/FS in addition to EPA's proposed remedy, which is a combination of components from the other alternatives, is presented in Table 2. The construction costs and the operation and maintenance costs for 30 years were estimated to give the ***present worth*** of total costs for each alternative. The clean-up level for each area of the Site is presented in Table 1. A schematic drawing depicting the remedy for each area is presented in Figure 2A.

Details of the Proposed Alternative (Alternative C-7A)

While Remedial Actions in the Building Area, the Courtyard and the groundwater may be performed independently, construction in the River Sediment Areas and the Southern Portion of the Site would be sequenced in order to minimize disturbances and avert potential releases of contaminants into the adjacent Delaware River environment. The schedule of Remedial Actions in the River Sediment Areas and the Southern Portion of the Site are as follows: (1) install a temporary Sheet Pile Cofferdam; (2) install a permanent Sheet Pile Wall and Oil-water Separators along the Site's riverbank; (3) remove an Underground Storage Tank and PCB Hot Spots; and (4) remove the contaminated sediments in the River Sediment Areas.

EPA's proposed remedy is Alternative C-7A and is described in greater detail below. This alternative represents a combination of several components of Alternatives C-5, C-7, C-8, and C-12. Approximate physical dimensions of various components are included solely to facilitate understanding and evaluation of the proposed alternative. Actual dimensions, as well as other specifics of design and construction and maintenance, will be identified during the Remedial Design, following final selection of a remedy and the issuance of a ***Record of Decision (ROD).***

1. The Building Area (including the Site Boundary)

A perimeter fence would be installed around the Site Boundary to restrict access and to prevent potential contact by trespassers as well as protect any control systems that may be installed as part of the remedy. Warning signs would be placed to warn local citizens about the hazards present at the

Site. Deed restrictions would be imposed to control future use and curtail development of the Site that may be adverse to the remedy.

No action would be taken within the Building Area since the Human Health Risk Assessment indicated that the risk within the building was $4x10^{-6}$, a level which does not warrant action (see Table 1). Furthermore, the perimeter fence restricts the public from being in contact with the PCB contamination inside the Building Area and the contamination is not mobile.

2. <u>Courtyard</u>

The Human Health Risk Assessment identified PCBs in the surface soil as a potential health hazard to *Future Industrial Workers* at the Site (Cancer risk = $7x10^{-5}$). Therefore all surface soil exceeding 10 ppm PCB would be excavated and disposed off-site at a licensed facility.

3. <u>River Sediment Areas (including the Mudflat, Riprap and Delaware River Sediment Areas)</u>

Sediments that exceed 1 ppm PCB or 32 ppm PAHs would be excavated from these areas. The excavated sediments containing up to 25 ppm PCBs would then be staged as fill for Hot Spots which would be removed within the Southern Portion of the Site. This process will be described below. Sediments that exceed 25 ppm PCB would be dewatered, separated and disposed off-site at a licensed facility. Oversized materials such as boulders would be decontaminated and reused as Riprap while unsuitable debris would be disposed off-site. All excavated areas would be restored with clean fill.

Prior to excavation of the Hot Spots, a permanent Sheet Pile Wall would be installed along the riverbank of the Site to prevent fill materials located in the Southern Portion of the Site from sliding into the river. Figure 2A illustrates its approximate location.

EPA anticipates that some residual contamination may remain after remediation of PCB Hot Spots, therefore EPA proposes a containment system consisting of Subsurface Trenches and Oil-water Separators to be installed along the riverbank of the Site (as part of the permanent Sheet Pile Wall). This system would collect and separate the floating PCB-contaminated oils that are being discharged with the groundwater. Groundwater would pass underneath the trenches and be allowed to flow into the Delaware River. All collected oils would be disposed off-site at a licensed facility.
Due to the concerns expressed above regarding DNAPLs (see page 2), the system would be designed to collect and remove any DNAPL discovered during the Remedial Design phase. This system must have the ability to be modified in order to actively collect DNAPLs before it reaches the Mudflat or any other River Sediment Areas. Such a system may include sump pumps in combination with the proposed Oil-water Separators.

Before excavating the River Sediment Areas, a temporary Sheet Pile Cofferdam would be installed along the Mudflat and the Delaware River Sediment Areas. This would enable contaminated sediments to be excavated and dredged without stirring up other sediments in the Delaware River and prevent contaminated sediments from moving into less contaminated areas. The exact area and depth of the sediments to be removed cannot be determined from the data collected during the January 1995 sampling effort. EPA will perform additional sampling during the Remedial Design. The final alignment of the temporary Sheet Pile Cofferdam will be determined by this additional sampling. Presently, the removal of contaminated sediments would be implementable near the shorelines where land-based excavation equipment can be utilized. The Delaware River is an area characterized by strong currents and water depths of 7 to 10 feet during low tide within 300 feet from the shoreline. Any removal of sediments beyond that distance would be more difficult and significantly more expensive.

4. Southern Portion of the Site (including the NAPL Area, the Hot Spots and the Underground Storage Tank)

The RI/FS identified an area that is saturated with oil as the NAPL Area and concluded this is the sole source of PCB contamination to the Delaware River from the Site. EPA believes that the Hot Spots, as discussed below, may also contribute to PCB contamination in the Delaware River.

The Human Health, Terrestrial and Aquatic Risk Assessments all have concluded that there is a threat to river sediments and organisms living in the Delaware River from Site-related PCBs and other contaminants of concern. PCBs may migrate into the river when rainwater, groundwater or tides from the Delaware flush the PCB-contaminated soils underneath the Site. If the contaminated river sediments are removed, they could be contaminated again because there are source areas within the Site that contain levels of PCBs above 25 ppm. These source areas are called Hot Spots and will present a continuous threat if they are not removed from the Site. As the first step, EPA proposes to sample and remove a suspected leaking Underground Storage Tank. The standard for removing and disposing of contents associated with the leaking tank normally would be 50 ppm PCBs. However EPA is proposing a clean-up standard of 25 ppm PCBs in order to be consistent with the Hot Spot removal standards since they are all located in the same area. Contaminated materials would be disposed of off-site at a licensed facility in accordance with federal PCB Storage and Disposal regulations (40 CFR 761.60).

To further delineate the Hot Spots within the Southern Portion of the Site, EPA proposes to resample the area in a thorough and methodical grid pattern. Final designation of the Hot Spots and the soils to be remediated would be based on this additional sampling. Based on the fragmented data that produced a subsurface soil profile for the RI/FS, EPA anticipates the Hot Spots to be less than 18 feet deep and located in 3 major areas as illustrated on Figure 2A. Hot Spot soils contaminated with PCB levels exceeding 25 ppm would be excavated and disposed of off-site at a licensed facility. This would be consistent with the TSCA PCB management policy for non-residential soils.

PCB contaminated sediments from the Mudflat, Riprap and the Delaware River which exceed 1 ppm PCBs but are less than 25 ppm PCBs would be used as fill for the excavated Hot Spots. The sediments approved for fill would not require further treatment.

Once the Hot Spots are removed and the voids are backfilled, a soil cover would be constructed over the entire Southern Portion of the Site to insure proper drainage of rainwater and surface water and minimize erosion of the Site fill. Finally, Site restoration would also include specific measures to promote wildlife habitat diversity. These aspects would be detailed in the Remedial Design.

5. Groundwater

Although the groundwater beneath the Site contains an array of elevated VOCs, SVOCs, and metals, the risks attributed to these contaminants in the groundwater were estimated to be low. Since the aquifer beneath the Site is designated as a Class III aquifer, which is currently not a source of drinking water and will not likely be in the future, human health risks cannot be attributed to the groundwater contamination. Since the level of groundwater contamination and the potential for off-site migration will decrease following the removal of Hot Spots, EPA proposes no groundwater remediation.

After the removal of the PCB Hot Spots, a monitoring program will be implemented to assure that PCB residual contamination discharging from the Site, in the form of groundwater or leachate, into the Delaware River does not cause an exceedance of the chronic ambient water quality criteria (AWQC) value of 0.014 ug/l (ppb). The monitoring program would also include sampling of liquids collected in the Oil-water Separators from both the LNAPL and potential DNAPL phases as discussed previously. This program is anticipated to monitor chemicals sampled during the RI/FS, which include PCBs, TCL

VOCs/ SVOCs, TAL metals, and groundwater chemistry parameters. It is anticipated that the monitoring program may also include wells upgradient and outside of the Metal Bank property boundaries in order to determine actual background levels of groundwater contamination. During Remedial Design, an investigation would also be performed on the lower groundwater aquifer to determine whether DNAPLs are discharging into the Delaware River or to the Torresdale water intake.

To assure that the remedy remains protective of aquatic life in the Delaware River, the long-term monitoring program which includes sampling of biological specimens and other parameters, will be developed during the Remedial Design.

V. EVALUATION OF PROPOSED ALTERNATIVE

Among the alternatives considered, alternative C-7A best meets the requirement set forth by the nine (9) criteria that EPA uses to evaluate alternatives. This section analyzes the proposed alternative with regard to the nine (9) criteria. A glossary of the nine (9) criteria is provided in the shaded box on the next page. A summary of the evaluation of all remedial alternatives considered with respect to the nine (9) criteria is presented in Table 3.

Overall Protection of Human Health and the Environment. Alternative C-7A provides protection of Human Health and the Environment by restricting access to the Site with a security fence and removing the Hot Spots of contamination and a suspected leaking Underground Storage Tank in the Courtyard and Southern Portions of the Site, thereby reducing the potential for direct contact exposure to the contaminants.

Contaminated sediments will be removed from the river habitat and replaced with clean fill. The major sources of river contamination will be removed, and any residual contamination will be intercepted by the Oil-water Separator and the Permanent Sheet Pile Wall. To assure that the groundwater reaching the Delaware River causes no harmful impacts, a sampling program will be instituted.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs). The following are highlights of laws and regulations which EPA must consider when implementing the proposed remedy for the Site.

The Land Recycling and Environmental Remediation Standards Act ("Land Recycling Act"), effective in Pennsylvania on July 18, 1995, establishes alternative cleanup levels for contaminated Site media, other than the "background" standard previously required by the Pennsylvania Hazardous Waste Management Regulations. Alternative cleanup standards, other than background, include statewide standards (to be developed) and site-specific, risk-based standards. Background is redefined as the "concentration of a regulated substance...that is present at the Site, but is not related to the release of regulated substances at the Site." However, since no samples were taken of upgradient and off-site wells, it cannot be conclusively shown that levels of any contaminants in Site groundwater were due to existing background contamination in the industrial area.

The Resource Conservation and Recovery Act (RCRA) and its implementing regulations include standards for closure of Underground Storage Tanks (40 CFR Part 280, Subpart F&G). Relevant guidances (such as the Spill Policy and PADEP's "Closure Requirements for Underground Storage Tank Systems, December 1993") recommends off-site soil disposal of tank-related contaminants at 25 ppm PCBs and TPH values on a site-specific basis. Appendix A of the FS evaluated and recommended disposal of contaminants at 10,000 ppm TPH.

The Toxic Substances Control Act (TSCA) and its implementing regulations, specifically 40 C.F.R. Part 761, establish the requirements for the manufacturing, processing, distribution in commerce, use, disposal, storage and marking of PCBs and PCB-contaminated items that contain concentrations of greater than 50 ppm PCBs. The disposal of PCB-contaminated soil and debris landfilled after February 17, 1978, that are greater than 50 ppm PCBs, is subject to the requirements of 40 C.F.R. Part 761, Subpart D. In this case, where the PCBs were deposited on the Site between 1968 and 1973, the disposal regulations in Subpart D are "relevant and appropriate". The decontamination standards set forth in the PCB Spill Cleanup Policy ("the Spill Policy"), 40 C.F.R. Part 761, Subpart G, applies to all spills that occurred after May 4, 1987. However, when a cleanup is performed of a pre-1987 spill, the policy can also be used. However, the Spill Policy, which is a "to-be-considered" ("TBC") for Superfund purposes can be used to provide guidance for cleanup of spills that occurred pre-1987. More stringent risk-based cleanup levels may apply to a cleanup when spills have occurred in environmentally sensitive areas such as a body of water, a drinking water aquifer, or grazing lands for animals.

EPA has considered the Spill Policy (40 CFR 761.120 - 761.135, Subpart G) and the EPA guidance document entitled "Guidance on Remedial Actions for Superfund Sites with PCB Contamination" (EPA/540/G-90/007, August 1990) in its determination of cleanup levels. The recommended cleanup standard for PCBs in the subsurface soil, under these guidances, are: (a) 25 to 50 ppm for industrial or other reduced access areas; and (b) 0.1 to 10 ppm for residential areas. However the guidances allows flexibility when formulating cleanup levels based on risks.

GLOSSARY OF EVALUATION CRITERIA

Threshold Criteria

- **Overall Protection of Human Health and Environment** - addresses whether a remedy provides adequate protection and describes how risks are eliminated, reduced, or controlled.
- **Compliance with ARARs** - addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of environmental statutes.

Primary Balancing Criteria

- **Long-Term Effectiveness and Permanence** - refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals are achieved.
- **Reduction of Toxicity, Mobility, or Volume Through Treatment** - refers to the anticipated performance of the treatment technologies a remedy may employ.
- **Short-Term Effectiveness** - addresses the period of time needed to achieve protection and any adverse impacts on human health and environment that may be posed during the construction and implementation period until cleanup goals are achieved.
- **Implementability** - refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.
- **Cost** - includes the present value of estimated capital, operation and maintenance costs.

Modifying Criteria

- **State Acceptance** - indicates whether, based on its review of the backup documents and Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.
- **Community Acceptance** - will be assessed in the Record of Decision following a review of any public comments received on the RI/FS report and the Proposed Plan.

With respect to the Human Health Risks, EPA recognizes that there is a day care center (St. Vincent's School) adjacent to the Site, which also serves as permanent residence to approximately 84 orphans. EPA's Human Health Risk Assessment concluded that the dangers of PCBs at the Southern Portion of the Site occurs only when people touch the contamination. However, since the PCBs are deep within the subsurface soil, skin contact is nearly impossible. This combined with other physical barriers such as a perimeter fence and a soil cover, will further eliminate human access to the PCB contamination. Since the Site is surrounded by other industrial facilities, EPA considers a PCB cleanup level of 25 ppm to be appropriate.

With respect to the Terrestrial and Aquatic Risk Assessments, EPA acknowledges that fish and other aquatic organisms do not recognize access restrictions and that the PCB migration has been observed through the groundwater. However, EPA is confident that after the removal of PCBs greater than 25 ppm, the monitoring programs will demonstrate residual PCB contamination leaching beyond the Oil-water Separators will not cause an exceedance of the chronic ambient water quality criteria (AWQC) value for freshwater aquatic life. The AWQC value of 0.014 ug/l (ppb) PCB is a requirement established by the Clean Water Act. It is necessary because fish and other aquatic organisms are more sensitive than humans since they are directly ingesting the PCB contamination.

EPA has evidence that PCB contamination inside the Building Area is as high as 372,000 ug/100 cm^2 (or 372 ppm/100 cm^2). This measurement was derived by grinding up a chunk of the stained building material and extracting the oil in order to measure the PCB concentration. The Human Risk Assessment had assumed that a risk occurs when a worker eats 1.67 mg (0.00000367 pounds) of PCB contaminated building dust daily for 250 days in a year. Concrete chips containing visible oil stains were sampled and the stained surfaces accounted for less than 10% of the Building Area. Therefore, EPA assume that a worker would only have 10% of the Building Area to be exposed to. EPA considers its assumption to be adequately protective of human health since ingestion risk at the Site takes into account the entire Site and not just the Building Area. EPA's calculated cancer risk under this assumption was $4x10^{-6}$. EPA considers PCB levels in the Building Area not to be a threat to human health.

EPA has considered the Spill Policy as it relates to the Building Area. The Spill Policy requires industrial areas of low-contact, indoor, and impervious solid surfaces, such as electrical substations, to be decontaminated to 10 ug/100 cm^2 (or 0.01 ppm/100 cm^2). However, since the Building Area is comprised of non-impervious surfaces, the exposure to workers coming in contact with the contamination is lower than is it would be if the PCBs were not absorbed by the surfaces. The high concentrations of PCBs were derived from a different sampling method than that assumed under the policy (see above). Therefore, the concentration derived from the sampling cannot be relied on to indicate the need for cleanup in the Building Area. At this time, EPA believes that the low risk calculated in the Human Health Risk Assessment justifies leaving the Building Area as is.

EPA proposed amendments to 40 CFR 761.61 (proposed on December 6, 1994 in 59 Federal Register 62788 - 62875) and will include this regulation as an ARAR if it becomes law at the time EPA issues its Record of Decision.

The Clean Air Act (CAA) and its implementing regulations are applicable concerning emissions of dust and particulates during activities such as dredging of the contaminated River Sediments or the removal of Hot Spots. To prevent air pollution during remediation, designs must utilize the Best Available Technology (BAT) as established by the Pennsylvania Air Pollution Control Act and Regulation (25 PA Code Chapter 127.12(a)(3) - (8).

The Endangered Species Act of 1973 mandates protecting fish and other species threatened with extinction. Since the Aquatic Risk Assessment concluded PCBs of greater than 1 ppm and 32 ppm PAHs pose an unacceptable risk to the Shortnose Sturgeon, removal of contaminated River Sediments based on that standard is required.

Section 311 of the Clean Water Act (CWA) prohibits the discharge of oil into navigable waterways. Consequently, oil in the Oil-water Separator must be prevented from entering into a navigable waterway such as the Delaware River. With regard to groundwater contaminants other than PCBs, which will be removed by the Oil-water Separator, EPA believes that these contaminants will not have any adverse impact on aquatic life, taking into account the dilution effect of the Delaware River.

Other regulations that were considered include Executive Order 11988, regarding Floodplain Management, since a portion of the Site is expected to be under 10 feet of water during a 100-year flood. To prepare for the detrimental effects of flooding water on the Site, the Remedial Design must build in safeguards that would prevent the 100 year flood from entering into the Building Area and mobilizing unremediated PCBs. Also, excavation and off-site disposal of PCB Hot Spots will prevent an overwhelming migration of PCBs from re-entering the river.

The remedy must comply with Executive Order 11990, May 1977, which requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Following the excavation of PCB contaminated river sediments, the remedy will require impacted areas be restored with clean fill.

Long-term Effectiveness and Permanence. Removal of the Courtyard soils and the Underground Storage Tank would eliminate the environmental impact from PCB contamination. Any soil cover or restrictions placed on the Southern Portion of the Site or the Building Area must be inspected and maintained periodically to ensure its effectiveness. Also the permanent Sheet Pile Wall must be inspected periodically for rusting and corrosion.

Although various organic and inorganic contaminants would remain in the Southern Portion of the Site after Alternative C-7A is implemented, they do not generate a risk to human health or the environment. Future land use may include enterprises that do not expose the environment or people to PCB contamination that remain in the Building Areas or to other contamination in the subsurface soils.

Additional containment measures such as the Oil-water Separators along the Delaware River would act as monitoring points and as contingencies to ensure the effectiveness of the remedy if residual PCBs exist.

Reduction of Toxicity, Mobility, or Volume Through Treatment. Contamination inside the Building Area was found on and in the concrete floors. Its volume and toxicity would not be reduced. As long as the building's structure remains intact, the contamination will not be mobilized by elements such as rainwater or fire.

Since alternative C-7A does not involve treatment of the contaminated soil prior to off-site disposal, there is no on-site reduction of toxicity, mobility or volume of those materials. Treatment of the soil may occur at the licensed disposal facility. Since the soils and sediments removed would be replaced with clean fill, the volume and mobility of the overall contamination at the Site would be reduced.

Short-term Effectiveness. Restoration of the River Sediment Areas and soil cover may require that a large amount of soil is brought onto the Site. This may result in an increase of truck traffic and generation of dust during construction. Dust suppression measures such as watering down the soil would be required.

Excavation of the Hot Spots and the River Sediment Areas could cause contaminated dust to be generated. Dust control devices such as fume hoods and other filters would be added onto the equipment in order to minimize the risk to the community. The same measures would apply to preparing the Courtyard soils for off-site disposal.

Dredging of the River Sediment Areas could cause temporary displacement of solids suspended in the Delaware River. By using a temporary Sheet Pile Cofferdam or other sediment control techniques, the turbidity caused by dredging can be minimized. The entire remedy could be in place in 2 to 4 years after Remedial Design.

Implementability. Alternative C-7A is made up of components that are readily implementable. Excavation and off-site disposal for the Hot Spot soils is a proven technology. Unlike the excavation and disposal of the entire NAPL Area contemplated in the RI/FS, EPA anticipates that the lesser volume of soil contained in the Hot Spots can be accepted at a single facility. EPA investigation indicates that the CERCLA and TSCA approved disposal facility that is capable of accepting the estimated volume from the Site is Model City, New York, located in within 400 miles of the Site.

Excavation and backfilling of the river sediments is a straight forward operation. EPA is proposing Alternative C-7A because other alternatives involving treatment of oil saturated soils have not been proven successful at other Superfund sites. Specialty services required for installation of the temporary Sheet Pile Cofferdam and the permanent Sheet Pile Wall and Oil-water Separators are commercially available.

Cost. EPA's investigation has shown that potential off-site disposal facilities that are licensed for acceptance of PCB-containing wastes are available, and disposal of the estimated soil volume will cost $2,422,323. The combined cost for the proposed alternative has been estimated at $17,168,000. This represents the removal of the worst areas of contamination, the removal of the contaminated River Sediment Areas and the collection of the oil discharged to prevent recontamination. EPA is proposing Alternative C-7A because it is protective of human health and the environment and its cost is less than other alternatives whose effectiveness has not been proven.

State Agency Acceptance. PADEP acceptance of the proposed alternative will be evaluated after the public comment period ends, and will be described in the ROD Responsiveness Summary.

Community Acceptance. Community acceptance of the proposed alternative will be evaluated after the public comment period ends, and will be described in the ROD Responsiveness Summary.

VI. COMMUNITY PARTICIPATION

EPA solicits input from the community on the cleanup methods proposed for each Superfund response action. EPA has set a public comment period from July 20 through August 19, 1995, to encourage public participation in the selection process. The comment period includes a public meeting at which EPA will present the RI/FS Reports and Proposed Plan, answer questions, and accept both oral and written comments.

A public meeting is scheduled for 7:30 PM on July 27, 1995, and will be held at the Disston Recreation Center, 1511 Disston Street, Philadelphia, Pennsylvania. The Disston Recreation Center is located approximately 2000 feet (or 1/2 mile) northwest of the Site, and off of Interstate I-95 (see Figure 1).

ABBREVIATIONS

AWQC	Ambient Water Quality Criteria
ARARs	Applicable or Relevant & Appropriate Requirements
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DNAPL	Dense Non-Aqueous Phase Liquid
EEC	Environmental Effects Criteria
EEQ	Environmental Effects Quotient
EPA	Environmental Protection Agency
HI	Hazard Index
HQ	Hazard Quotient
HRS	Hazard Ranking System
LNAPL	Light Non-Aqueous Phase Liquid
MCLs	Maximum Contaminant Levels
MW	Monitoring Well
NAPL	Non-Aqueous Phase Liquid
NCP	National Contingency Plan [or National Oil and Hazardous Substances Pollution Contingency Plan]
NOAA	National Oceanic & Atmospheric Administration
NPL	National Priorities List
OSWER	Office of Solid Waste and Emergency Response
PA	Pennsylvania
PADER	Pennsylvania Department of Environmental Resources
PAHs	polynuclear aromatic hydrocarbons
PCBs	Polychlorinated Biphenyls
ppb	Parts Per Billion
ppm	Parts Per Million
PRPs	Potentially Responsible Parties
RCRA	Resource Conservation & Recovery Act
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SVOCs	Semi-Volatile Organic Compounds
TAL/TCL	Target Analyte List/Target Compound List
TPHs	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
ug/cm^2	micrograms per square centimeter
USCG	United States Coast Guard
VOCs	Volatile Organic Compounds

Comments will be summarized and responses provided in the Responsiveness Summary section of the ROD. The ROD is the document that presents EPA's final selection for cleanup. To send written comments or obtain further information, contact:

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FIGURES

AND

TABLES

Attachments to the

Superfund Program Proposed Plan
Metal Bank Superfund Site

Philadelphia, PA

July 1995

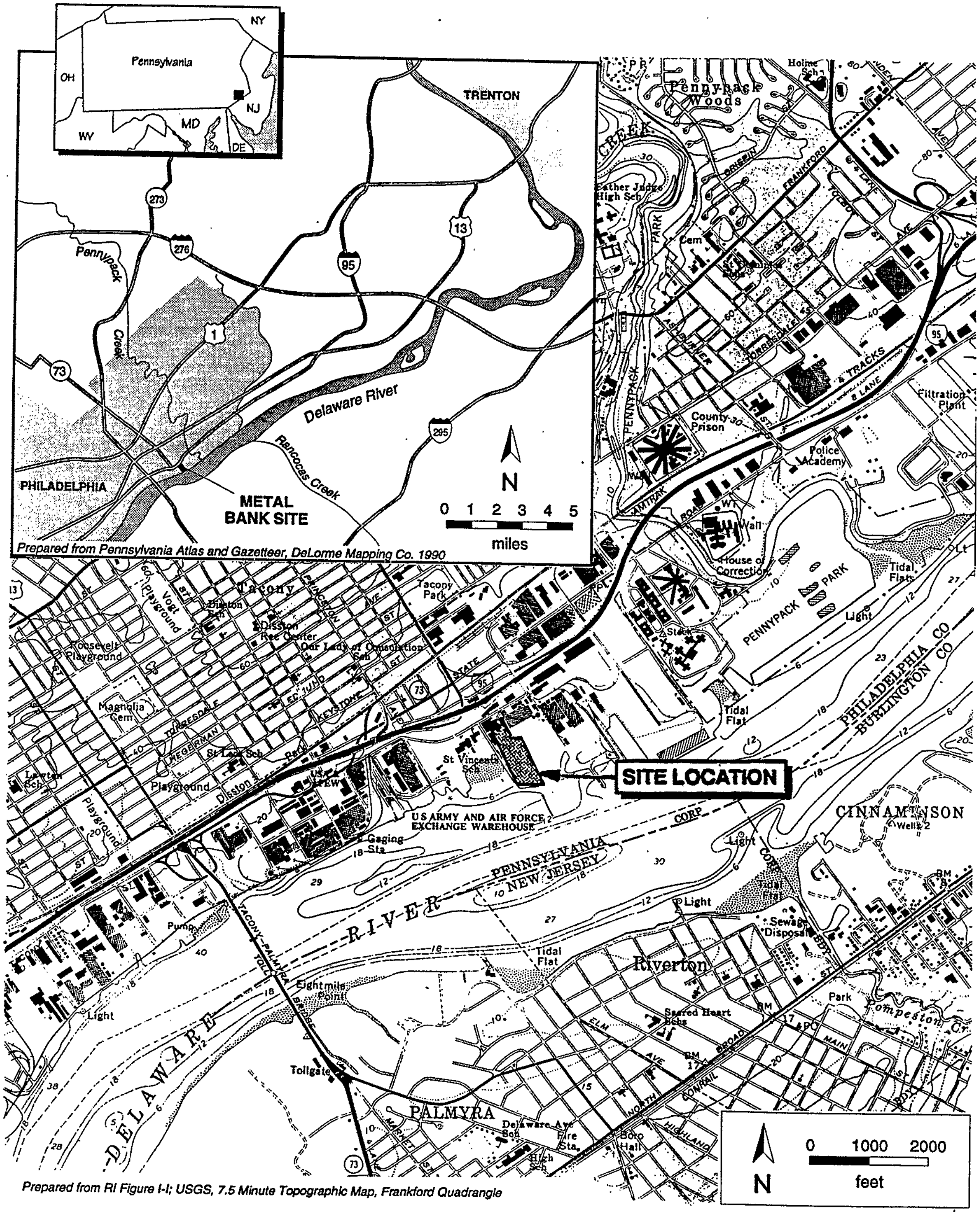


Figure 1. Site location.

EPA REGION III
SUPERFUND DOCUMENT MANAGEMENT SYSTEM

DOC ID 115000
PAGE # AR302295

IMAGERY COVER SHEET
UNSCANNABLE ITEM

SITE NAME Metal Bank

OPERABLE UNIT 00

ADMINISTRATIVE RECORDS- SECTION III VOLUME C

REPORT OR DOCUMENT TITLE figures & tables

DATE OF DOCUMENT July 1995

DESCRIPTON OF IMAGERY site map.

NUMBER AND TYPE OF IMAGERY ITEM(S) colored photos

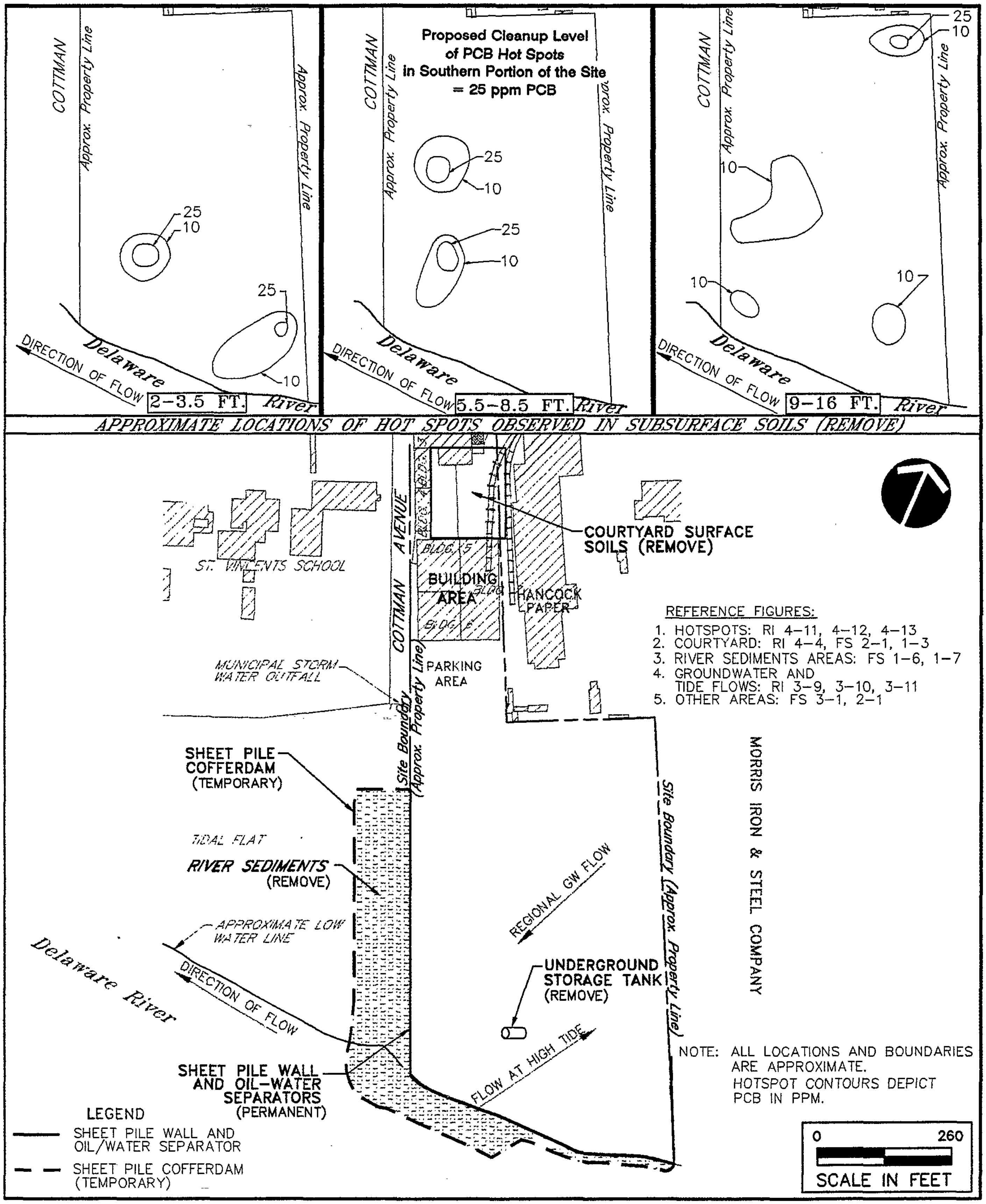
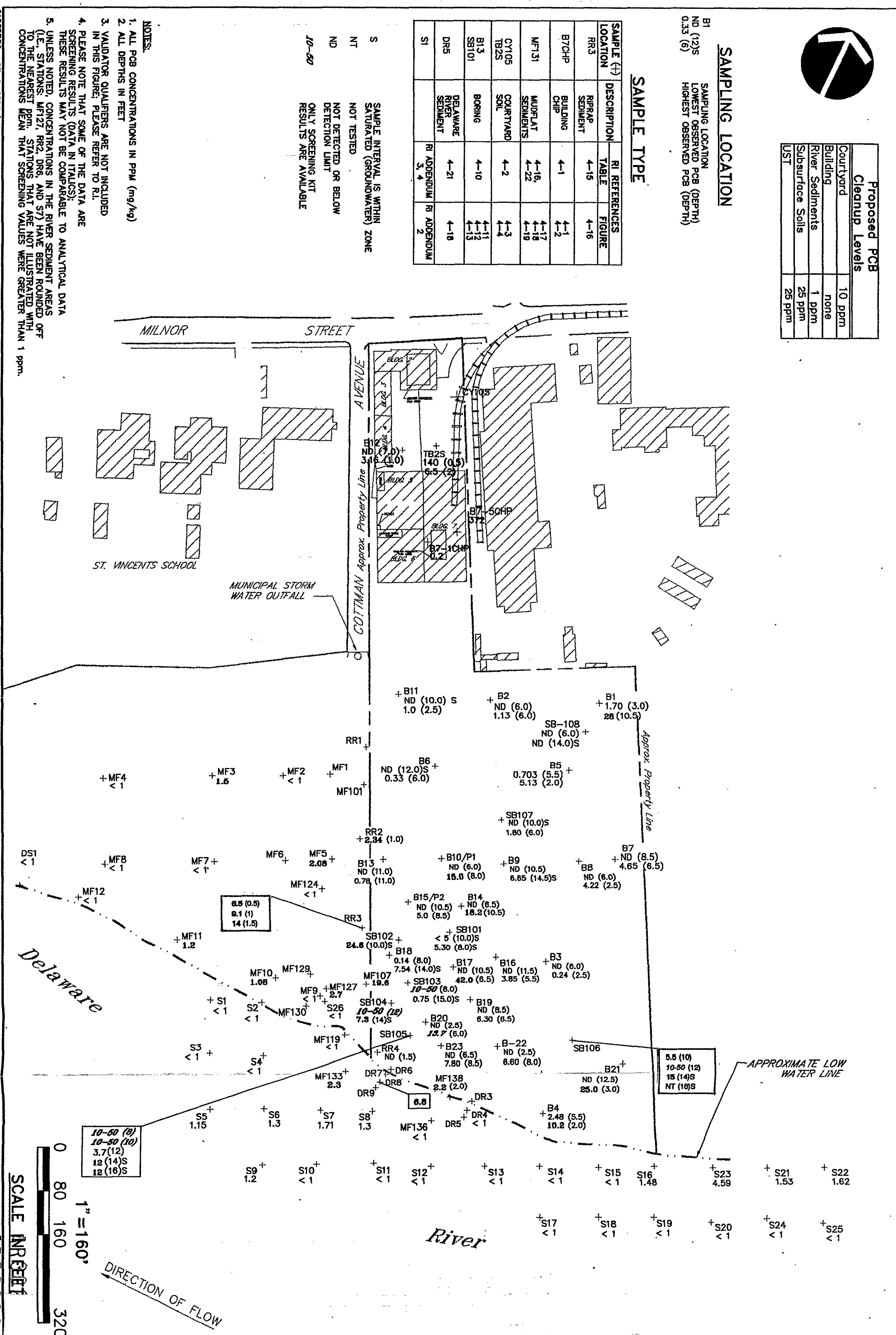


Figure 2A
Abstract of Remedy
Metal Bank Site



Proposed PCB Cleanup Levels	
Courtyard	10 ppm
Building	none
River Sediments	1 ppm
Subsurface Soils	25 ppm
UST	25 ppm

B1 SAMPLING LOCATION
ND (12)S LOWEST OBSERVED PCB (DEPTH)
0.33 (6) HIGHEST OBSERVED PCB (DEPTH)

SAMPLE TYPE

SAMPLE (+) LOCATION	DESCRIPTION	RI REFERENCES TABLE	RI REFERENCES FIGURE
RR3	RIPRAP SEDIMENT	4-15	4-16
B7CHP	BUILDING CHIP	4-1	4-1, 4-2
MF131	MUDFLAT SEDIMENTS	4-16, 4-22	4-17, 4-18, 4-19
CY105 TB2S	COURTYARD SOIL	4-2	4-3, 4-4
B13 SB101	BORING	4-10	4-11, 4-12, 4-13
DR5	DELAWARE RIVER SEDIMENT	4-21	4-18
S1		RI ADDENDUM 3, 4	RI ADDENDUM 2

S SAMPLE INTERVAL IS WITHIN SATURATED (GROUNDWATER) ZONE
NT NOT TESTED
ND NOT DETECTED OR BELOW DETECTION LIMIT
10-50 ONLY SCREENING KIT RESULTS ARE AVAILABLE

NOTES:
1. ALL PCB CONCENTRATIONS IN PPM (mg/kg)
2. ALL DEPTHS IN FEET
3. VALIDATOR QUALIFIERS ARE NOT INCLUDED IN THIS FIGURE; PLEASE REFER TO R.I.
4. PLEASE NOTE THAT SOME OF THE DATA ARE SCREENING RESULTS (DATA IN ITALICS); THESE RESULTS MAY NOT BE COMPARABLE TO ANALYTICAL DATA
5. UNLESS NOTED, CONCENTRATIONS IN THE RIVER SEDIMENT AREAS (I.E. STATIONS: MF127, RR2, DR6, AND S7) HAVE BEEN ROUNDED OFF TO THE NEAREST ppm. STATIONS THAT ARE NOT ILLUSTRATED WITH CONCENTRATIONS MEAN THAT SCREENING VALUES WERE GREATER THAN 1 ppm.

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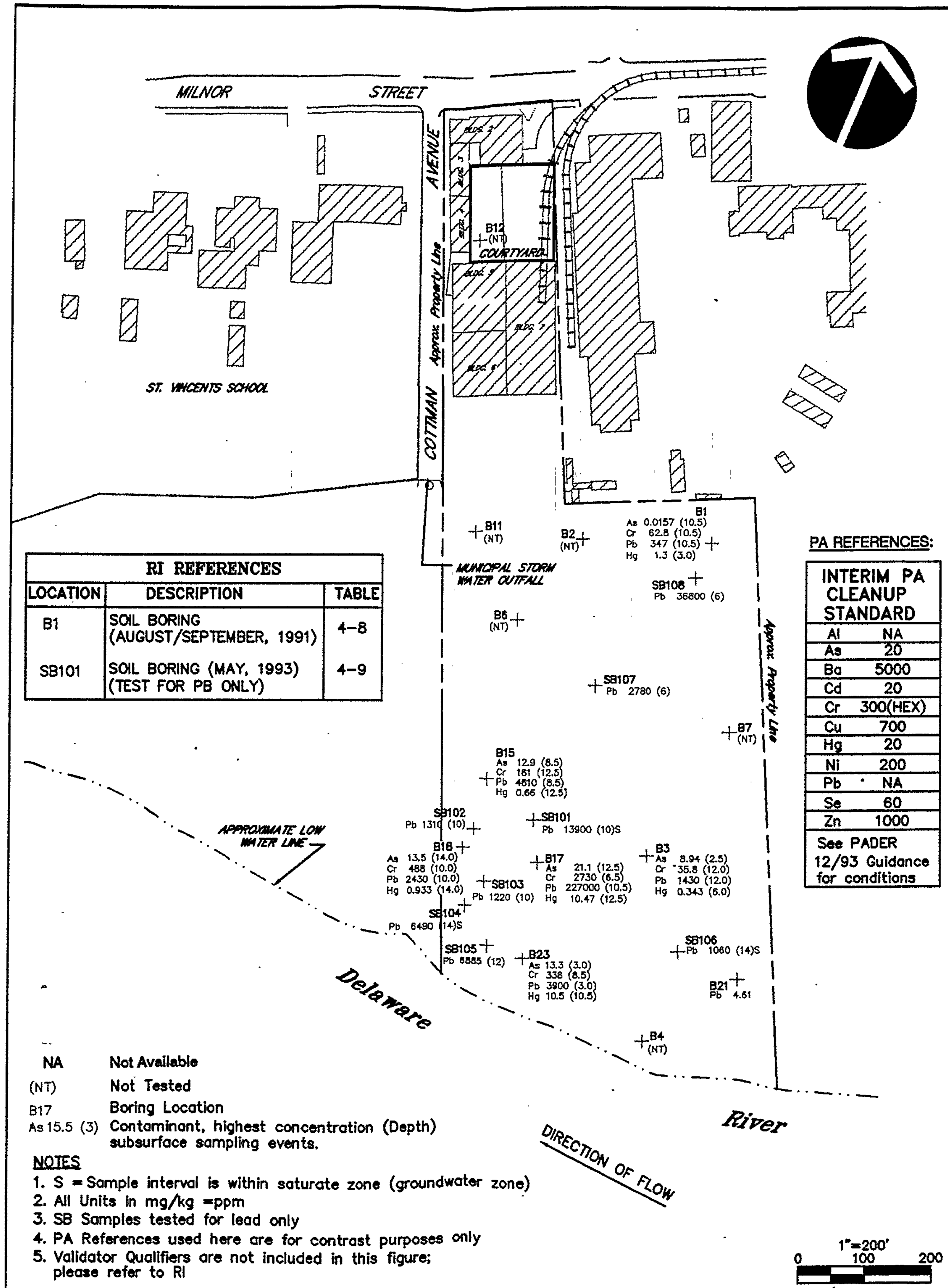
Figure 3
Highest/Lowest Observed PCB Contamination – In Courtyard, Building Areas and Southern Portion of Site
Highest Observed PCB in River Sediment Areas



RI REFERENCES		
LOCATION	DESCRIPTION	TABLE
B1	SOIL BORING (AUGUST/SEPTEMBER, 1991)	4-8
SB101	SOIL BORING (MAY, 1993) (TEST FOR PB ONLY)	4-9

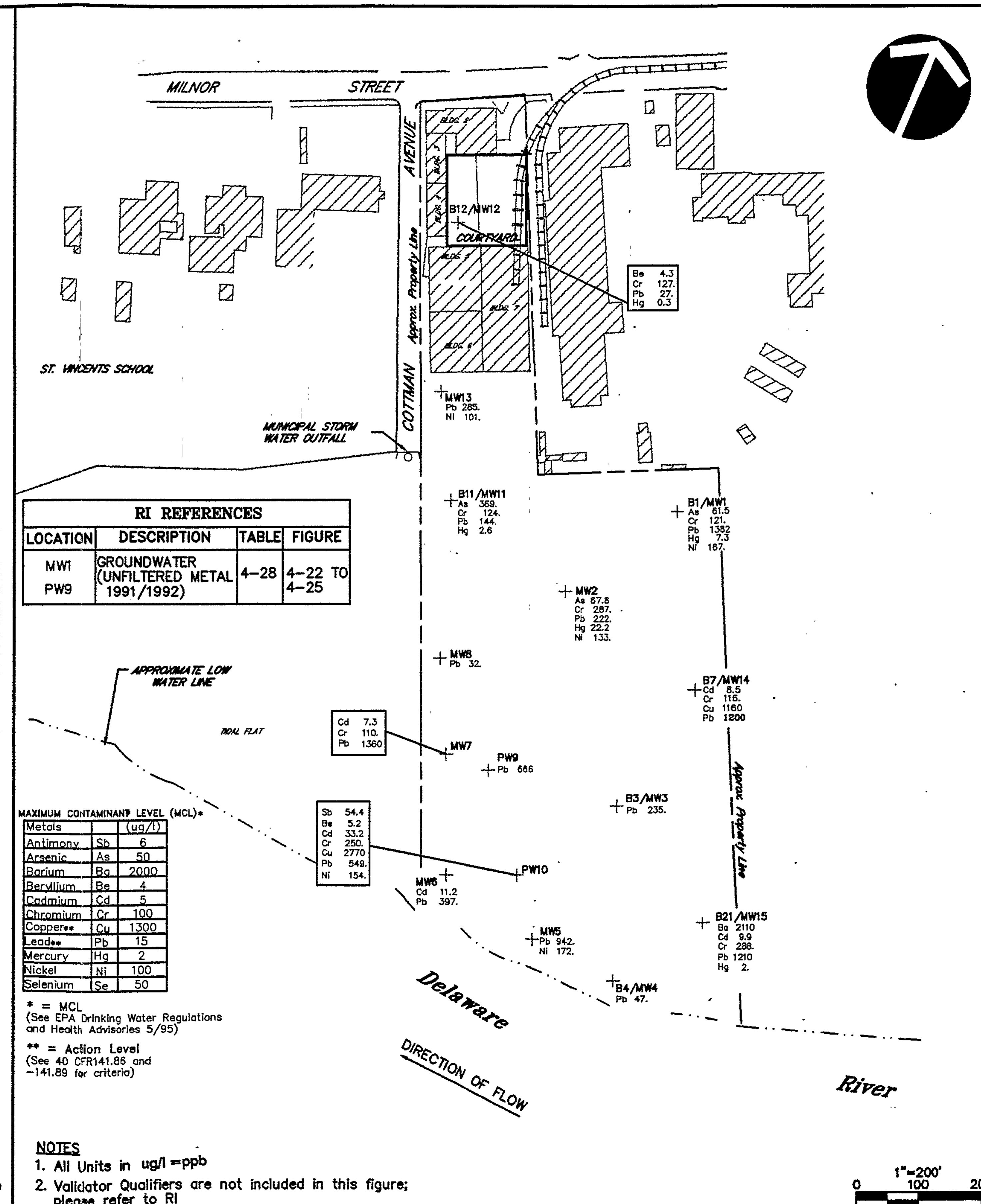
PA REFERENCES:

INTERIM PA CLEANUP STANDARD	
Al	NA
As	20
Ba	5000
Cd	20
Cr	300(HEX)
Cu	700
Hg	20
Ni	200
Pb	NA
Se	60
Zn	1000
See PADER 12/93 Guidance for conditions	

NA Not Available
(NT) Not Tested
B17 Boring Location
As 15.5 (3) Contaminant, highest concentration (Depth) subsurface sampling events.

NOTES
1. S = Sample interval is within saturate zone (groundwater zone)
2. All Units in mg/kg =ppm
3. SB Samples tested for lead only
4. PA References used here are for contrast purposes only
5. Validator Qualifiers are not included in this figure; please refer to RI

Observed Elevated Metals in Soil (With emphasis on lead)



RI REFERENCES			
LOCATION	DESCRIPTION	TABLE	FIGURE
MW1 PW9	GROUNDWATER (UNFILTERED METAL 1991/1992)	4-28	4-22 TO 4-25

MAXIMUM CONTAMINANT LEVEL (MCL)*

Metals		(ug/l)
Antimony	Sb	6
Arsenic	As	50
Barium	Ba	2000
Beryllium	Be	4
Cadmium	Cd	5
Chromium	Cr	100
Copper**	Cu	1300
Lead**	Pb	15
Mercury	Hg	2
Nickel	Ni	100
Selenium	Se	50

* = MCL (See EPA Drinking Water Regulations and Health Advisories 5/95)
** = Action Level (See 40 CFR141.86 and -141.89 for criteria)

NOTES
1. All Units in ug/l =ppb
2. Validator Qualifiers are not included in this figure; please refer to RI

Observed Highest Metals (Unfiltered) Exceeding MCL in Groundwater

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TABLE 1: SOURCE OF HUMAN & ECOLOGICAL RISKS

("Source of Risks") for Metal Bank Site

PROBLEM AREAS	MEDIA	CONTAMINANTS	HUMAN HEALTH RISKS		TERRESTRIAL RISK EEQ	AQUATIC RISK HQ	CLEANUP REMEDY	CLEANUP LEVEL
			CANCER	HI				
BUILDING AREA	NA	NA	$4x10^{-6}$	NA	NA	NA	No Action	No Action
COURTYARD	Surface Soil	PCBs Trace Elements	$7x10^{-5}$	NA	0.008	NA	Off-site Disposal	10 ppm PCBs
SURFACE WATER	Surface Water	PCBs Pesticides[10, 11]	$3x10^{-7}$	0.000002	NA	> 1	Source is "Groundwater"	No Action
SOUTHERN PORTION OF SITE	Surface and Subsurface Soil	PCBs Dioxins/Furans Trace Elements SVOCs	$3x10^{-6}$ (surface) $9x10^{-6}$ (subsurface)	0.006 (surface) 0.2 (subsurface)	NA	NA	Source is "Oil Layer of Groundwater"	25 ppm PCBs 10,000 ppm TPH
	Oil Layer of Groundwater	PCBs PAHS Dioxins/Furans Phthalates	$6x10^{-3}$	0.07	NA	500000 20-4500	Off-site Disposal (Hot Spots & UST)	25 ppm PCBs 10,000 ppm TPH
RIPRAP AREA MUDFLAT AREA nearshore (< 30 m) farshore (> 30 m) DELAWARE RIVER SEDIMENT AREAS	Sediments	Dioxins/Furans PCBs PAHs Pesticides[14] Trace elements[12] Phthalates	$1x10^{-5}$	0.01	~ 20,000[17] 300[17]	5-400[6] 0.1-246 5-131 7.6-144 <1-623	Relocate to Hot Spots	1 ppm PCBs 32 ppm PAHs
	Fish Tissue	PCBs	$4x10^{-4}$	NA	NA	0.3 - 14.3		
GROUNDWATER	Oil Layer of Groundwater	PCBs PAHs Pesticides[10] Trace element[9]	6x10-6	0.0008	~ 1,000[17]	NA	Off-site Disposal (Oil Layer)	Any Oil
	Groundwater		NA		NA	NA	No Action (Groundwater)	No Action

NOTES: Individual contaminants have been grouped to simplify risks (ie. PCBs, PAHs, metals, pesticides). Risks have been rounded off, unless noted, for simplification.
NA = Information Not Available or Scenario Not Applicable for calculation. Shading indicates unacceptable risk.

SUPERSCRIPTS:
6: Degree of risk declines with distance from the Riprap Area into the Mudflat Area.
9: Arsenic, cadmium, chromium, copper, lead, mercury, and zinc.
10: DDT, DDE, and DDD
11: Trace elements were not analyzed.
12: Chromium, copper, lead, mercury, and zinc
14: DDE and DDE
17: Total EEQ value

REFERENCES: HUMAN HEALTH RISK = RI Appendix D.1 & memo from R. Smith, USEPA dated 4/28/95 (Re: Recalculation of Risks), specifically Table 24.
TERRESTRIAL RISK = RI Appendix D.2, specifically pages 13 thru 15. AQUATIC RISK = RI Appendix D.3, specifically Section 6, including Tables 6-1 thru 6-4.

FILE: JL:CL:jl:cl/071995T1.PP

AR302298

TABLE 2 : SUMMARY OF ALTERNATIVES
("ALTERNATIVES") for METAL BANK SITE

AREAS	MEDIUM	C - 1	C - 5	C - 7	PROPOSED ALTERNATIVE C - 7A	C - 8	C - 12
BUILDING AREA (including the Site Boundary)	Concrete floor and wall	• No Action	• Access Restriction (i.e. Fence) • Deed Restriction	• Access Restriction (i.e. Fence) • Deed Restriction	• Access Restriction (i.e. Fence) • Deed Restriction	• Access Restriction (i.e. Fence) • Deed Restriction	• Access Restriction (i.e. Fence) • Deed Restriction
COURTYARD	Surface Soil	• No Action	• Excavate and Dispose Off-site	• Excavate and Dispose Off-site	• Excavate and Dispose Off-site	• Excavate and Dispose Off-site	• Excavate and Dispose Off-site
RIVER SEDIMENT AREAS [a] (includes Mudflat, Riprap and Delaware River Sediment Areas)	Sediment	• No Action	• Excavate and Relocate to NAPL Area	• Excavate and Relocate to NAPL Area	• Excavate and Relocate to Hot Spots	• Excavate and Relocate to NAPL Area	• Excavate and Dispose Off-site
SOUTHERN PORTION OF THE SITE		• No Action	• Cap	• Cap	• Soil Cover	• Cap	• Cap
	UST	• No Action	• Dispose Off-site	• Dispose Off-site	• Dispose Off-site	• Dispose Off-site	• Dispose Off-site
	NAPL Area/ Subsurface Soil	• No Action	• No Action	• Solidification/ Stabilization	• PCB Hot Spot Disposal [c]	• Soil Washing	• Dispose Off-site
GROUNDWATER [a]	Groundwater	• No Action	• No Action	• No Action	• No Action [b]	• No Action	• No Action
	Oil Layer	• No Action	• Oil Water Separator • Dispose Off-site	• Oil Water Separator • Dispose Off-site	• Oil Water Separator • Dispose Off-site	• Oil Water Separator • Dispose Off-site	• Oil Water Separator • Dispose Off-site
COST	Captial	–	$10,405,000	$23,448,000	$13,756,000	$27,994,000	$86,680,000
	Annual O & M Years 1 - 2	$347,000	$455,000	$451,000	$451,000	$451,000	$431,000
	Annual O & M Years 3 - 30	$87,000	$195,000	$190,000	$191,000	$190,000	$182,000
	Total PW 30 Years at 5%	$1,821,000	$13,889,000	$26,860,000	$17,168,000	$31,356,000	$90,092,000

JL:CL:jl:cl/071995T2.PP

SUPERSCRIPTS:

(a) All alternatives include long-term monitoring of River Sediment Areas and groundwater.
(b) Investigate DNAPL and background in groundwater.
(c) Hot Spots not limited to NAPL Area. Hot Spots are defined by PCB concentrations greater than 25 ppm in soils.

REFERENCES:

1. FS, specifically Sections 3 & 4; Tables 3-1 thru 3-12.

AR302299

TABLE 3: ALTERNATIVE COMPLIANCE WITH ESTABLISHED CRITERIA

("EVALUATIONS")
Metal Bank Site

ALTERNATIVE	C - 1	C - 5	C - 7	PROPOSED ALTERNATIVE C - 7A	C - 8	C - 12
OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	NO	NO	PARTIAL[1]	YES	PARTIAL[1]	PARTIAL[1]
COMPLIANCE WITH ARARs/TBCs	*Surface water* - NO[2] *Groundwater* - NO[3] *Floodplains* - NO *Property lines* - YES *Wetlands* - YES *Wildlife* - NO[4] *Excavation* - YES *On-site Treatment* - YES	*Surface water* - PARTIAL[5] *Groundwater* - YES *Floodplains* - NO[6, 7] *Property lines* - NO[8] *Wetlands* - PARTIAL[9, 7] *Wildlife* - PARTIAL[7] *Excavation* - YES[7] *On-site Treatment* - YES[7]	*Surface water* - PARTIAL[5] *Groundwater* - YES *Floodplains* - NO[6, 7] *Property lines* - NO[8] *Wetlands* - PARTIAL[9, 7] *Wildlife* - PARTIAL[7] *Excavation* - YES[7] *On-site Treatment* - YES[7]	*Surface water* - PARTIAL[5] *Groundwater* - YES *Floodplains* - NO[6, 7] *Property lines* - NO[8] *Wetlands* - PARTIAL[9, 7] *Wildlife* - PARTIAL[7] *Excavation* - YES[7] *On-site Treatment* - YES[7]	*Surface water* - PARTIAL[5] *Groundwater* - YES *Floodplains* - NO[6, 7] *Property lines* - NO[8] *Wetlands* - PARTIAL[9, 7] *Wildlife* - PARTIAL[7] *Excavation* - YES[7] *On-site Treatment* - YES[7]	*Surface water* - PARTIAL[5] *Groundwater* - YES *Floodplains* - NO[6, 7] *Property lines* - NO[8] *Wetlands* - PARTIAL[9, 7] *Wildlife* - PARTIAL[7] *Excavation* - YES[7] *On-site Treatment* - YES[7]
REDUCTION OF MOBILITY, TOXICITY and VOLUME	NO	PARTIAL[11,12]	PARTIAL[1,14]	PARTIAL[11]	PARTIAL[1]	PARTIAL[1,11]
LONG-TERM EFFECTIVE	NO[10]	NO[10]	YES[1]	YES	YES[1]	YES[1]
SHORT-TERM EFFECTIVE	*Protection of community during remedial action* - YES *Protection of workers during remedial action* - YES *Environmental Impact* - NO	*Protection of community during remedial action* - PARTIAL[15] *Protection of workers during remedial action* - PARTIAL[15, 16] *Environmental Impact* - PARTIAL[17]	*Protection of community during remedial action* - PARTIAL[15] *Protection of workers during remedial action* - PARTIAL[15, 16] *Environmental Impact* - PARTIAL[17]	*Protection of community during remedial action* - PARTIAL[15] *Protection of workers during remedial action* - PARTIAL[15, 16] *Environmental Impact* - PARTIAL[17]	*Protection of community during remedial action* - PARTIAL[15] *Protection of workers during remedial action* - PARTIAL[15, 16] *Environmental Impact* - PARTIAL[17]	*Protection of community during remedial action* - PARTIAL[15] *Protection of workers during remedial action* - PARTIAL[15, 16] *Environmental Impact* - PARTIAL[17]
IMPLEMENTABILITY	YES	YES	PARTIAL[18,19]	YES[18]	PARTIAL[18,19]	YES[18]
COST	$1,821,000	$13,889,000	$26,860,000	$17,168,000	$31,356,000	$90,092,000

FILE: JL/CL:jl/cl/071995T3.PP

1: PCB continue to release from Site since cleanup level based on TPH values not PCBs. EPA investigation concluded no correlation between TPH & PCBs values (see EPA 7/6/95 memo to file).
2: Continued LNAPL release. CWA & PA Clean Stream Law not attained.
3: No additional protection of groundwater resources would be provided.
4: Does not contain any mitigative or preventive measures that would protect native biota from the effects of contamination from the site.
5: Short-term non-compliance would be reduced by erosion and sedimentation controls, and by working at low tide when possible.
6: Variance required for remedial activities to occur within the 100-year floodplain.
7: Other long and short-term compliance issues may arise.
8: A variance would be required for remedial activities to occur within the 50 ft buffer zone between a property line and remedial activity.
9: Remedial activities would encroach upon wetlands and river, and therefore would require a variance.
10: No controls over source of contamination.
11: No treatment would occur.
12: No reduction of toxicity, mobility, or volume would occur.
14: Volume would increase through treatment process.
15: Short-term impacts may occur from release of dust during excavation. Dust control measures would be implemented.
16: Protective equipment would be implemented.
17: Excavation of contaminated River Sediment Areas would have a minor, short-term impact on river and wetlands.
18: Impacts to construction difficult to quantify, due to large obstructions & debris in the fill.
19: Process efficiency and system design dependent on the results of a Treatability Study on soil and sediment from Site.

REFERENCES:
1. FS, specifically Section 4; Tables 2-1 to 2-3; and Appendix A.